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EXAMINER	
BIAGINI, CHRISTOPHER D	

ART UNIT	PAPER NUMBER
2142	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/784,111	KAMEDA, MASAMI	
	Examiner	Art Unit	
	Christopher Biagini	2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-8,10-14 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-8, 10-14, and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to the objection to the specification, in light of the amendments filed December 14, 2007, are persuasive. The objection is **withdrawn**.

Applicant's arguments with respect to the rejection of the claims under 35 USC 112, in light of the amendments filed December 14, 2007, are persuasive. The rejection is **withdrawn**.

Regarding the argument that the combination of Soltis and Bessire does not disclose Applicant's configuration that "a storage-side controller communicates with a server-side controller via a SAN," with "the SAN also serving as a path for transferring a data block to a backup storage unit," the Examiner first notes that this language is far more specific than what is required by the claims. Applicant further argues that the combination is not the same as the claimed invention "because Soltis does not disclose a SAN-based system in communication between the storage-side controller and the server-side controller." Again, this language is far more specific than the language in the claims. Furthermore, Applicant appears to be arguing Soltis individually, where the rejection is based on a combination of Soltis and Bessire. As described in the previous Action, one of ordinary skill in the art would have been motivated to combine the teachings of Soltis and Bessire to arrive at a system which meets the language of the claims.

Regarding the arguments that Soltis and Bessire do not disclose "a second controller which, in response to information that identifies a particular block to be transferred from said first controller via the SAN, identifies a file corresponding to the particular block using said table

and transfers the identified file to said second storage unit via a local area network (LAN) using a file transfer protocol," and "the first controller and the second controller are coupled via said SAN to establish a path for the transfer between said first storage unit and said second storage unit using the block transfer protocol and another path for the transfer using the file transfer protocol with the LAN," Applicant has merely asserted that Soltis and Bessire do not teach these features. The Examiner disagrees for the reasons provided in the previous Action and herein.

Regarding the argument that Soltis and Bessire do not disclose "said table receives from said first controller information indicating whether the particular block has been transferred to said second storage unit successfully in units of data blocks," the Examiner agrees. Accordingly, the rejection has been **withdrawn**. However, upon further consideration, **a new grounds of rejection is made**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6, 10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PGPUB 2002/0083120) in view of Bessire (US PGPUB 2003/0097607), and further in view of Kleiman (US PGPUB 2003/0237019).

As to claim 1, Soltis shows a computer system for transferring data from a first storage unit (Nasan client 142: see Fig. 11) to a second storage unit (NAS server 106) via a network, said computer system comprising:

- a first controller (Nasan file system 322) provided in the first storage unit, which transfers data stored in said first storage unit, to said second storage unit using a block transfer protocol (see [0147] and note that Nasan layer 322 can "service the [write] request using the SAN write data-path 326," and that the SANs make use of a block-level protocol, as described in [0052]);
- a storage area network (SAN) through which the transfer of data using the block transfer protocol is performed to said second storage unit (SAN 128);
- a table which associates a file composed of a plurality of blocks of data with blocks of data constituting the file (comprising an allocation table: see Fig. 6 and [0010]-[0012]); and
- a second controller (remote file system 156), which, in response to information that identifies a particular block to be transferred from said first controller (comprising a write request: see [0147]), identifies a file corresponding to the particular block using said table (necessarily the case, as any information that specifies a file for transfer also identifies a corresponding block, and in order to transfer the file, remote file system 156 must use the allocation table to identify it) and transfers the identified file to said second storage unit via a local area network (LAN 104) using a file transfer protocol (see [0152] and note that the NAS data-path 148 makes use of a file-level protocol, as described in [0029]),

- wherein the first controller and the second controller are coupled to establish a path for the transfer between said first storage unit and said second storage unit using the block transfer protocol (note that writes from NASAN file system 322 proceed through and another path for the transfer using the file transfer protocol with the LAN (see Fig. 11 and [0147]).

  Soltis does not show:

  - identifying a particular block via the SAN,
  - wherein said the first controller and the second controller are coupled via the SAN to establish the paths, and
  - wherein said table receives from said first controller information indicating whether the particular block has been transferred to said second storage unit successfully in units of data blocks.

A person of ordinary skill in the art, upon reading the Soltis reference, would recognize the desirability of improved methods of connecting the controllers. Bessire shows that a first controller and a second controller may communicate over a network (see [0030]), and Soltis shows a finite number of networks (LAN 104 and SAN 128). Thus, it would have been obvious to one of ordinary skill in the art to try connecting the controllers over the various networks, as a person with ordinary skill has good reason to pursue the known options within his or her technical grasp. In turn, because the connection over the SAN as claimed has the properties predicted by the prior art, it would have been obvious to modify the system of Soltis such that the first and second controllers communicate over, and are coupled via, the SAN. Note that such

an arrangement would cause the first controller to identify the block via the SAN (as this would be the mechanism by which the controllers communicate).

Kleiman shows a table (comprising a stripemap table) receiving information indicating whether a particular block (disk block 42) has been transferred to a second storage unit (disk 141) successfully in units of data blocks (see [0048]). It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis such that the table receives information on whether data transfer was successful as taught by Kleiman in order to keep track of which data items have been replicated to a redundant storage unit.

Claims 6, 10, and 16 correspond to claim 1, and are rejected for the same reasons as given above.

As to claim 14, Soltis in view of Kleiman and Bessire shows the limitations of claim 10 as applied above, and Soltis further shows wherein said computer system notifies information identifying a block address to said first controller to request to transfer data on a block basis. Note that write requests from application programs 150 necessarily send remote file system 156 "information identifying a block," since any information that specifies a file for transfer also identifies a corresponding block. See [0147].

Claims 3-5, 7, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PGPUB 2002/0083120) in view of Bessire (US PGPUB 2003/0097607), and further in view of Kleiman (US PGPUB 2003/0237019) and Ayres (US Pat. No. 7,134,040).

As to claim 3, the combination of Soltis, Bessire, and Kleiman shows the limitations of claim 1 as applied above, and further shows said first controller notifying information identifying a particular block to said second controller based on "numerous factors" (see [0147]), but does not show that one of those factors is the detection of a transfer failure.

Ayres shows notifying a controller (comprising an available adapter 12*a* or 12*b*) of information identifying a particular block (comprising a current device position) based on the detection of a transfer failure (see col. 6, line 23 to col. 7, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the notification of information taught by Ayres in order to automatically choose an available path to a storage device when the initial path fails (see col. 1, lines 53-61).

As to claim 4, the combination of Soltis, Bessire, Kleiman, and Ayres shows the limitations of claim 3 as applied above, and further shows wherein the identified file includes data of blocks other than the block related to the transfer failure (see Soltis, [0010], which described that files typically contain multiple data blocks).

As to claim 5, the combination of Soltis, Bessire, Kleiman, and Ayres shows the limitations of claim 4 as applied above, and further shows wherein the data of blocks other than the block related to the transfer failure is data that has been transferred by said first controller via

the SAN using the block transfer protocol (note that, as taught by Ayres, the failure may occur after data has already been transferred: see col. 6, lines 23-28).

As to claim 7, the combination of Soltis, Bessire, Kleiman, and Ayres shows the limitations of claim 6 as applied above, but does not show wherein, when the transfer on a file basis fails, said second controller identifies a plurality of second blocks related to the transfer-failed file and instructs said first controller to transfer data of the plurality of second blocks.

Ayres shows when a transfer fails, a controller (device driver 8) identifies a plurality of blocks (comprising the block remaining to be transferred) related to the transfer-failed file and instructs a second controller (comprising an available adapter 12*a* or 12*b*) to transfer data of the plurality of blocks (see col. 6, line 23 to col. 7, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the notification of information taught by Ayres in order to automatically choose an available path to a storage device when the initial path fails (see col. 1, lines 53-61).

As to claim 13, the combination of Soltis, Bessire, Kleiman, and Ayres shows the limitations of claim 10 as applied above, and further shows said first controller notifying information identifying a block address to said second controller via the SAN based on "numerous factors" (see [0147]), but does not show that one of those factors is the detection of a transfer failure.

Ayres shows notifying a controller (comprising an available adapter 12*a* or 12*b*) of information identifying a block address (comprising a current device position) based on the detection of a transfer failure (see col. 6, line 23 to col. 7, line 10).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the notification of information taught by Ayres in order to automatically choose an available path to a storage device when the initial path fails (see col. 1, lines 53-61).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PGPUB 2002/0083120) in view of Bessire (US PGPUB 2003/0097607) and further in view of Kleiman (US PGPUB 2003/0237019), Ayres (US Pat. No. 7,134,040), and Duncan et al. (US PGPUB 2004/0098637, hereinafter "Duncan").

The combination of Soltis, Bessire, Kleiman, and Ayres shows the limitations of claim 7 as applied above, but does not show wherein said first storage unit comprises a main volume and a sub volume that store the same contents of data and wherein, when a transfer of data, stored on said sub volume, on a block basis fails, said first controller notifies information identifying the block of transfer-failed data to said second controller and, in response to an instruction to transfer data of a plurality of blocks related to the transfer-failed file from said second controller, transfers data corresponding to the plurality of blocks, stored on said main volume, on a block basis.

Ayres shows notifying information identifying blocks of transfer-failed data (comprising a current device position) and instructing a controller to transfer data corresponding to the

plurality of blocks (comprising an available adapter 12*a* or 12*b*). See col. 6, line 23 to col. 7, line 10.

Duncan shows a first storage unit (storage device 130) comprising a main volume (secondary storage system 118) and a sub volume (primary storage system 108) that store the same contents of data (see [0021]). Duncan further shows wherein transfer of data stored on said sub-volume fails, transferring data stored on said main volume (see [0025]).

It would have been obvious to further modify the system of Soltis with the notifying and instructing taught by Ayres in order to identify data which needs to be transferred. It would have been obvious to further modify the system of Soltis with the failure handling of Duncan in order to provide volume failover from one array to another in a manner transparent to a host operating system (see Duncan, [0006]).

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltis (US PGPUB 2002/0083120) in view of Bessire (US PGPUB 2003/0097607), and further in view of Kleiman (US PGPUB 2003/0237019) and Tzelnic (US Pat. No. 5,948,062).

As to claim 11, Soltis in view of Kleiman and Bessire shows the limitations of claim 10 as applied above, but does not show wherein said second controller transfers a management table, which associates the information identifying block addresses with a file identifier, to said other computer when data is transferred on a file basis.

Tzelnic shows transferring a management table which associates information identifying block addresses with file identifiers (see col. 11, lines 1-5 and col. 12, lines 12-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with the management table transfer taught by Tzelnic in order to maintain consistency between storage devices (see Tzelnic, col. 11, lines 6-8).

As to claim 12, Soltis in view of Kleiman and Bessire shows the limitations of claim 10 as applied above, but does not show wherein the information identifying a block address is a logical block address.

Tzelnic shows logical block addresses (see col. 12, lines 12-15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the system of Soltis with logical block addresses as taught by Tzelnic in order to provide a layer of abstraction between the addresses applications use to access data and the physical location of blocks on disk.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Biagini whose telephone number is (571) 272-9743. The examiner can normally be reached on weekdays from 8:30 AM to 5:00 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571) 272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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